

PEARL HARBOR NAVAL SHIPYARD & INTERMEDIATE MAINTENANCE FACILITY



**CAPABILITY
(What We Can Do For You)**

OVERVIEW

For nearly a century the United States Navy has relied upon Pearl Harbor Naval Shipyard for critical repairs. Our shipyard is the largest ship repair facility between the west coast and far east, strategically located roughly two weeks steam time from potential major regional contingencies in East Asia. The Shipyard's civilians and sailors keep the Pacific Fleet ships and submarines "Fit to Fight", as they have for nearly a century. Over that 100 years the significance of the Asia-Pacific Region has increased significantly, as reflected in recent Chief of Naval Operations plans to adjust Navy force posture and basing to provide at least six carriers and 60% of our submarines to the Pacific region.

Situated five miles east of downtown Honolulu on 112 acres, our \$1.5 billion facility with 114 buildings and 4 dry docks (one dry dock capable of being split into two with an intermediate caisson or used as a single dry dock) is a full-service Regional Maintenance Center, providing "One Stop" maintenance and technical support for the greater Pacific.

OUR MISSION – Our Purpose and Our Reason for Being

Pearl Harbor Naval Shipyard's primary mission is to provide regional maintenance, at the depot and intermediate levels, to keep the surface ships and submarines of our nation's Navy "Fit to Fight." As Hawaii's regional maintenance center we provide excellence in environmentally responsible ship repair overhaul, conversion, alteration, refurbishment, defueling, refueling, and decommissioning of Navy vessels.

No Ka Oi – We are the model for efficiency, productivity, safety, environmental protection and continuously improve ship maintenance to meet our customers' expectations



OUR VALUES

Honor

We are accountable for our professional behavior and are mindful of the privilege we have to serve our Nation.

Courage

We have the moral and mental strength to do what is right with confidence and resolution, even in the face of temptation or adversity.

Commitment

The day-to-day duty of everyone in the Shipyard is to join together as a team to improve the quality of our work and to mutually support each other.

CAPABILITIES AND MISSION COMPOSITE

Product Lines

- Fleet Maintenance
 - Total Maintenance Concept
 - Nuclear Regional Maintenance Department
 - SSN 688 and 774 class submarine upkeeps.
 - Surface Warfare Enterprise (SWE)/Private Sector
 - Surface Ship upkeeps
- Chief of Naval Operations Maintenance
 - SSN 688 and 774 class submarine availabilities
 - Surface Warfare Enterprise/Private Sector Contracting
- Other Productive Work - shafts, component repair



Services

- Pacific Area Support - Guam Fly-Away and other areas
- Fleet Technical/Distance Support
- Ship Technical Assessments
- Fleet Calibration Center
- Regional Dive Locker
- Hazardous Material Management/Hazardous Waste Disposal
- Cryptological Equipment Repair
- Sailor Training
- Regional Maintenance & Modernization Coordination
- Joint Oil Analysis & Chemical Labs
- Natural Disaster Response

OUR LEGACY

Leased as a coaling station from King Kalakaua in 1887, Pearl Harbor Naval Shipyard has seen the world's navies transition from sail to steam to nuclear power. Our workers have seen two world wars. They rebuilt the U.S. fleet after the attack on Pearl Harbor and played a key part in the eventual allied victory. They have also supported our nation's defense in conflicts in Korea; Vietnam; the decades-long Cold War; more recently, Operations Desert Storm / Desert Shield; and Operations Iraqi and Enduring Freedom. Today, we keep our great nation's Navy engaged on the front line of the Global War on Terror. Through it all, generations of our heroic workers have been a key part of Hawaiian and American history, forging an unparalleled legacy in their own blood, sweat and determination.

OUR PEOPLE, OUR FUTURE

Today, Pearl Harbor Naval Shipyard is developing a diverse, highly professional workforce. As direct supporters of the finest fighting force in the world, our most important element is the quality of the people we hire, develop and reward. They make us a better, stronger, more capable shipyard.

Shipyard Apprentice Program

Through a partnership with the Shipyard and Honolulu Community College, the Apprentice Program provides opportunities for selected trainees to work alongside journeymen, receive trade theory training and work toward a degree in Applied Trades at Honolulu Community College. The four-year work/study program prepares students for careers in various industrial trades. Upon successful completion of the program, graduates are normally offered permanent positions in the shipyard. Each year, nearly 3,000 of Hawaii's best and brightest apply for the 100-150 positions available, providing our Shipyard with the "best of the best."

Shipyard Engineering Program

The Shipyard is also revitalizing its technical workforce. The Shipyard engineers are responsible for the development of plans and technical directions in the overhaul or replacement of systems on the most complex pieces of inventory in the Defense arsenal. We recruit this talent from the University of Hawaii School of Engineering – as well as other universities – to bring approximately 40-60 graduating engineers aboard each year.

A Good Neighbor

- In addition to its economic impact, the Shipyard is a civic neighbor and serves as a responsible steward of Hawaii's most valuable resource – its environment.
 - Recipient of numerous Navy, defense, and federal government level environmental awards.
 - Generally recognized as having one of the best industrial environmental programs in the Department of Defense.
 - The Shipyard routinely gives computers and equipment to schools, and sends hundreds of volunteers to work at events like the Special Olympics.
 - Workers regularly support charitable organizations, including donations to charities in the Combined Federal Campaign
 - Multiple recognition by the Hawaii Psychological Association with "Healthy Workplace Award" for best employee environment in a government installation.
-

Mailing Address

Commander
Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility
Attn: Code 1160 (Congressional and Public Affairs Office)
667 Safeguard St, Suite 100
Pearl Harbor, HI 96860-5033

Normal Work Hours

Day Shift: Monday – Friday	0630 – 1500 hrs
Evening Shift: Monday – Friday	1430-2300 hrs
Night Shift: Monday – Friday	2230-0700 hrs

Shipyard Point of Contacts

General Public and Congressional Inquiries

Code 1160 (Congressional and Public Affairs Office) – (808) 474-0272

Business Inquiries

Code 1200 (Business and Strategic Planning Office) – (808) 473-8000, ext. 9198

Shipyard's Internet Web Page – <http://www.phnsy.navy.mil>

TABLE OF CONTENTS

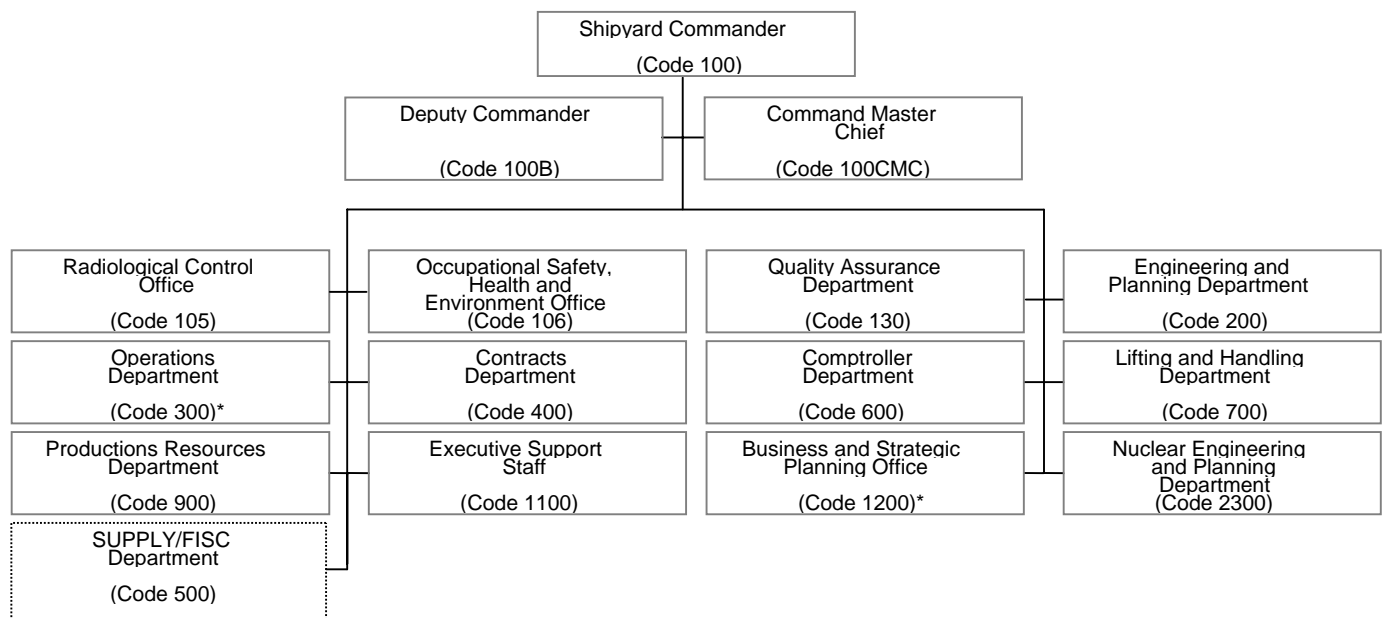
	Page No.
Shipyard Organization – People	1
Improved Processes - Our Tools for Success	4
Facilities and Equipment	5
Dry Docks	5
Cranes	6
Shop Facilities and Equipment	7
Services	13
Non Destructive Testing (NDT)	13
Materials, Chemical & Special Testing	13
Welding Services	13
Painting & Coating Services	14
Thermal Spray Technology & Application	14
Structural Fabrication & Lay Out	15
Sheet Metal & Label Plate Services	15
Manufacturing & Machining Services	15
Component Refurbishment	16
Valves – In Shop Services	16
Shipboard Mechanical Component & Valve Repairs	16
Governor & Injector Services	17
Internal Combustion Engine Services	17
Hydraulic Services	17
Piping System Services	17
Heat Exchanger & Cooler Services	18
Air Conditioning & Refrigeration Services	18
Insulation Services	18
Fabric & Containment Services	18
Shipwright & Wood Working Services	19
Rubber & Plastics Manufacturing Services	19
Temporary Services	20
Electrical & Electronic Services	20
Ordnance Equipment Test & Repair Services	22
Crane, Rigging, Transportation, Maintenance, Testing & Certification	23
Consolidated Diving Services	23
Occupational Safety, Health & Environmental Services	24
Other Services	24

SHIPYARD ORGANIZATION – PEOPLE



People are the core of our ship maintenance business. Working as a fully integrated team, we provide the opportunity for every individual to develop into future leaders in the NAVSEA corporation. Our specific emphasis is:

- Personal and professional development, using the 5-vector model, to help us deliver high quality products and services that meet or exceed customer expectations and gain us recognition as an industry leader.
- A commitment to diversity.
- An environment where each individual is encouraged and rewarded for innovation and for challenging the “status quo”.
- An enabled workforce, continually maturing through education and developmental opportunities, to ensure our people control and invest in their personal futures.
- A skill base fully aligned and integrated to mission.



*Codes 300N (Nuclear Production Manager) and 1200N (Nuclear Business Manager) are key nuclear management positions that report directly to Code 100

Our work force includes engineers, technicians, mechanics, quality assurance inspectors, and non-destructive testing inspectors. We are a diversified organization composed of more than 1,400 General Service employees, including over 500 engineers/technicians. We also employ more than 2,600 mechanics/inspectors, including more than 500 apprentices from a variety of trades. We have 600-plus active duty navy personnel working with our civilian workforce.

<i>Trade Occupations</i>
<i>Coatings & Coverings</i>
<ul style="list-style-type: none"> • Fabric Worker: Plan, design, layout, construct and install containments using clear PVC sheeting, Herculite and other flexible materials. Other work includes reupholstering furniture and manufacturing tool bags, tank suits, banners, tents, leather articles and items of canvas, Naugahyde, Herculite and linen. • Insulator: Apply a variety of insulation materials on hulls, steam turbines, distillation plants, refrigeration plants, ventilation ducts and other submarine piping systems to prevent loss of heat or cold, to prevent condensation and reduce transfer of noise from the submarine to the sea. • Painter-Blaster: Apply paints, powder coating and coverings for functions, decorative or protective purposes aboard submarines, ships, and in shop areas. • Plastic Fabricator: Build, modify and repair plastic components by using techniques such as casting, fiberglass laminating, thermoforming, vacuum bag molding, compression molding or stray coating using a diverse selection of synthetic compounds. Milling of rubber compounds, valve repair, finish painting, water jet cutter operation and plug wiring and molding. • Shipwright: Use transits and levels to establish working lines and reference points, check vessel alignment during docking evolutions, and construct precise docking blocks on which the vessel sits while in dry dock. Install, maintain and remove all staging associated with ship work. Other work includes rough and finish woodworking, and making wooden mock-ups.
<i>Electrical & Electronics</i>
<ul style="list-style-type: none"> • Electrician: Install and repair motor control circuits, motors and generators and portable electric equipment; circuit breakers, manufacture and repair cables, connectors and panels used for navy vessels and temporary electrical service. Typical work includes the installation and maintenance of shore power and shore electrical services in support of production and ship's habitability needs. • Electronics Mechanic: Install, troubleshoot, repair and test shipboard electronic instrument and control equipment and systems. Systems include radar, sonar, fire control, communications and radio. Typical work also includes the manufacture, repair and test of various sonar transducers and arrays. • Electronic Measurement Equipment Mechanic: Work involved in maintenance, repair, calibration, and certification of electronic test, measurement, and reference equipment used for precise measurement of a variety of electrical and electronic values, quantities, and relationships such as voltage, resistance, capacitance, frequency, and inductance. Work also requires skill in performing such processes as troubleshooting, repairing, modifying, overhauling, testing, installing, and calibrating a variety of measurement equipment, instruments, and consoles.
<i>Lifting & Handling</i>
<ul style="list-style-type: none"> • Heavy Mobile Equipment Mechanic: Maintain the Shipyard's fleet of cranes and equipment. Work includes the overhaul and repair of diesel and gasoline engines, gearboxes and brakes. • Rigger: Uses lifting and handling equipment such as cranes, chain hoists, wire pennants, shackles, beam clamps, strong backs and dollies to safely remove, replace or reposition various pieces of heavy equipment and components on ships and submarines, in and around dry docks.

<i>Mechanical</i>
<ul style="list-style-type: none"> • Electronic Industrial Controls Mechanic: To troubleshoot, repair and overhaul the various systems that are incorporated in numerically controlled machines. Systems to include mechanical, hydraulic, pneumatic, electrical, servo and numerical control and computer numerical control units. • Machinist: Manufactures needed parts using machines such as lathes, milling machines, boring machines, drilling machines and computer controlled machines (CNC). Work involves disassembling, inspecting, machining, reassembling and testing components such as valves, compressors and pumps. • Marine Machinery Mechanic: Installs, removes, optically aligns, tests, overhauls and repairs ship's main propulsion machinery including steam turbines, internal combustion engines, reduction gears, propeller shafts, pumps, valves, auxiliary engines, nuclear components, ordnance machinery and other shipboard components.
<i>Piping</i>
<ul style="list-style-type: none"> • Pipe fitter: Remove, repair, and install the major propulsion, auxiliary and weapons systems aboard submarines. Manufacture, install, repair, maintain, and remove all dockside to shipyard temporary piping services.
<i>Structural</i>
<ul style="list-style-type: none"> • Sheet metal Mechanic: Layout, manufacture, installs and repair complex ventilation systems, furniture, lightweight bulkheads and doors on ships and submarines. • Ship fitter: Layout, manufacture, install, remove, and repair structural assemblies on ships and submarines, varying in size from less than 100 pounds to over several tons. • Welding: Join and cut all types of industrial and marine metals using complex welding and thermal cutting processes during the overhaul, repair and modernization of ships and submarines.

<i>Engineering Occupations</i>
Civil, Structural, Mechanical, Electrical, Electronics, Industrial, General, Welding, and Nuclear

<i>Other Technical Occupations</i>
Chemist, Metallurgist, Combat Systems, Health Physicist, Safety and Environmental, and Technicians in various fields

Improved Processes - Our Tools for Success



Creating a Lean Shipyard

In alignment with the Navy and the Naval Sea Systems Command (NAVSEA), Lean is the primary tool of choice at our Shipyard for process improvement. The Shipyard's Command Process Improvement Office (Code 100PI) was established to facilitate, promote and provide expertise for process improvement at our Shipyard.

Several tools are applied - Lean, Six Sigma, Theory of Constraints, root cause mapping and self-assessment to facilitate continuous process improvement. Our Lean capabilities include:

Lean Resources:

- Approximately 20 black belt graduates of NAVSEA's Lean Six Sigma college including several Lean Six Sigma black belts with Department of Navy/American Society for Quality (DoN/ASQ) black belt certification.
- Over 100 green belt training graduates trained by our Shipyard under the oversight of NAVSEA's Lean Six Sigma College.

Lean Training:

- Introduction to Lean Concepts (1/2 day duration)
- Green belt training (5 days duration)
- Value Stream Champion Training (3 days duration)
- For NAVSEA standard black belt training, students are sent to NAVSEA's Lean Six Sigma college black belt training (5 weeks duration over approximately 5 month period). Students from the Hawaii region can attend the college's west coast campus at Port Hueneme in California vice the East Coast campus in Norfolk, Virginia.

Facilities:

- Lean events & activities (Executive Planning Sessions, Value Stream Analysis, Rapid Improvement Events, Projects) are generally conducted within our Shipyard.
- Lean training has generally been conducted within our Shipyard. Exception have been made, for example green belt training of Pearl Harbor Fleet Industrial Supply Center (FISC) personnel at their headquarters building. Lean training has been provided to personnel from other Navy and Marine activities in Hawaii as well as FISC.

FACILITIES AND EQUIPMENT

We are the largest industrial complex in the state of Hawaii and the pacific region. Our facilities and equipment are able to service the navy's fleet and other agencies. Below is a map of our facility showing our Shipyard and our Intermediate Maintenance Facility (IMF) location.



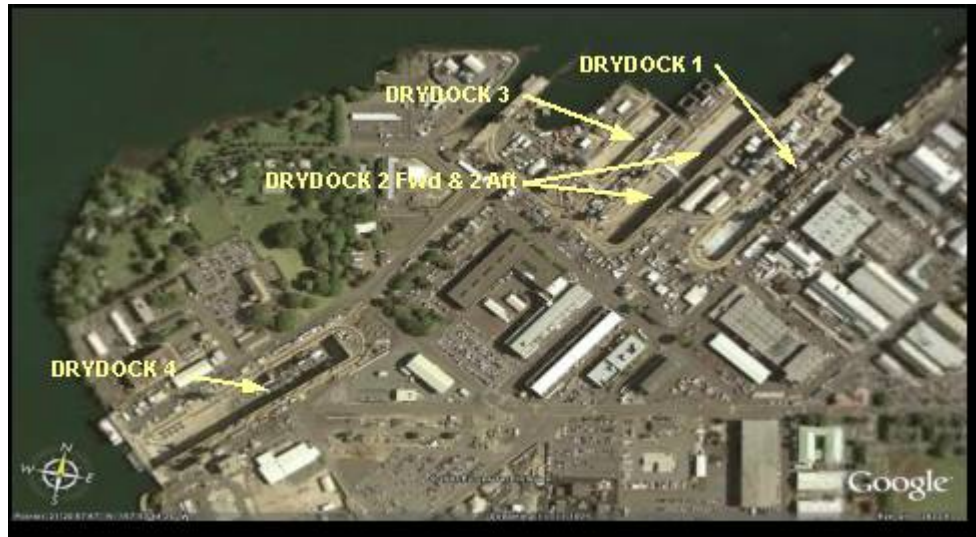
Our Shipyard occupies 112 acres, including 114 buildings and 4 dry docks. The plant value of the facility is \$1.5 billion. We provide our people the facilities, tools, and equipment they need to be successful. We ensure our facility and equipment improvement plans are developed and executed to focus on:

- o Safety
- o Effectiveness of waterfront work
- o Improved workflow of industrial processes
- o Encouraging pride and a sense of ownership in the Shipyard

Listed in this section are our major and significant facilities and equipment that we have.

DRYDOCKS

We have four dry docks with dry dock 2 capable of being split into two (2 Forward and 2 Aft) with an intermediate caisson or used as a single dry dock. We are a 5 dry dock capable Shipyard.



Dry Dock	Length (ft)	Width (ft)	Depth (ft)	Largest Class of Ship Capability
1	1002	138	35	LHD-1 Wasp class and LHA-6 Class
2	1000	147	46-1/2	LHD-1 Wasp class and LHA-6 Class
(2 Fwd & 2 Aft)	500	147	46-1/2	SSN 774 Virginia class submarines
3	497	104	22-1/2	SSN 688 class submarines with Buoyancy Assist Module (BAM)
4	1088	155	48-1/2	CVN-68 to 75 Nimitz class air craft carriers without bulbous bow. CVN-76 and later flights have bulbous bows. NAVSEA approved for carrier emergent dockings.

CRANES

We have over 170 active cranes in our inventory that include portal cranes, floating cranes, truck cranes and bridge/wall/jib cranes.



Our various portal cranes have a capacity from 120,000 to 343,000 pounds that provide services throughout the shipyard at four dry docks and the Bravo piers up to Bravo 19.

One of the most versatile cranes is the 100 long ton floating crane.



This crane can be used almost anywhere within the harbor. It has a capacity of 224,000 lbs at an 80 foot radius. At this radii the hook is over 180 feet above the water.

Truck cranes with 10,000 pound capacity are typically used at the Yankee, Sierra, Mike or Bravo piers or in and around industrial buildings.

The shipyard has a wide variety of bridge cranes from modern remote controlled 120,000 pound capacity dual trolley cranes to vintage 1940 cranes. Bridge cranes, monorail or jib cranes



of various capacities can be found in almost every industrial shop.



SHOP FACILITIES AND EQUIPMENT

Precision & Large Scale Machining & Metal Forming (In Shop and Portable)

- Boring/facing machines To 72"
- Computerized Numerical Control and conventional lathes, milling machines, and routers
- Custom-manufactured machines
- Cutting operations to within .001"
- Cylindrical grinding capacity 24" diameter x 5' long
- Honing capacity 15" diameter x 12' long
- Horizontal mill capacity 14' wide x 8' wide x 5' high including a 5' rotary table
- Lathe capacities 1/16" To 7' diameter up to 77' in length
- On-Site & In-Place Repairing
- Planner accommodates work pieces 14' wide x 16' long x 10' high
- Portable mills/lathes/drills
- Press Brakes and Punches
- Surface grinding capacity 4' wide x 8' long
- Vertical boring lathe capacity of 28' diameter x 8' high
- Vertical internal grinding capacity 36" diameter x 5' high.



Heat Treating

- Furnace with a capacity of 3' wide x 4' high x 8' length
- Treatments include case hardening, carburizing, and stress relieving

Compression & Injection Molds

- Gasket/brushing/straight or ring
- Rubber and plastics
- Short or long run injection molds
- Single or multiple cavities
- Specialty custom molds to order

Label Plates & Wire Markers

- Computer engraving
- Heat shrink wire markers
- Metal/phenolic engraving
- Metal/plastic cable markers

Large Structural Shop Fabrication Facility



Structural Metal Forming & Cutting

- Air – carbon arc cutting and gouging
- Automatic cutting tables
- CNC plasma cutter/punch/drill and
- CNC thermal cutter
- Computerized metal saws
- Computerized spinning
- Forming press up to 1800 ton capacity
- Hammers up to 6 ton capacity
- Hammers up to 6-ton
- High volume oxy-fuel
- Hull and frame rolls
- Laser cutting (CAD/CAM)
- Oxy fuel, plasma arc cutting
- Saw (vertical and horizontal and mitering band saws)
- Shear capacity up to 12'x 1½ " thickness
- Shears and brakes
- Structural shape roll capacity up to 12"x12"x1¼" angle to an 8' radius and larger saw
- Water jet cutting/grinding



Welding Equipment

- Flux cored arc – gas shielded
- Gas metal arc
- Manual and automatic gas-tungsten arc
- Orbital arc welding
- Robotic welding
- Shielded metal arc
- Submerged arc welding (shafts)
- Thermal heating



Large Sheet Metal Fabrication Facility



Piping Equipment

- Acid flush equipment
- Computerized precision pipe benders
- Flex hose refurbishing facility
- Hydro blast cleaning
- Mil-Std- 767 and steam plant cleanliness cleaning/flushing
- Precision piping end prep machinery
- Vortex air and CO₂ freeze seal equipment



Painting & Coating Facility & Equipment

- Abrasive blast facility
- Aluminum flame spray facility and equipment
- High pressure hydro blast equipment
- In shop powder coating facility
- In shop teflon coating facility
- Shipboard and in shop painting (epoxy, high solids, etc)

Shipwright, Fabric Facility & Equipment

- 52" board saw, sizing 52' long timbers
- Large wood shop facility
- Staging and platforms
- Various wood working equipments

- Fabric welding machines
- Heat sealing machines for plastic goods
- Industrial sewing machines

Electrical & Electronics Facilities & Equipment

- Battery replacement
- Circuit breaker and magnetic controller facilities
- Electrical cabling
- Fire control
- Gyro
- Motor generator maintenance & repair
- Motor rewind and repair
- Optical alignment
- Ordnance
- Periscopes, antennas and communication
- Radar and sonar
- Switchboard repair and overhaul



Calibration (Fleet Calibration Center)

- Differential pressure detectors
- Electrical meters and equipment
- Load indicating devices
- Micrometers, calipers, indicators
- Navy Type II Standards Laboratory
- Pressure gages and instruments
- Relief valves
- Thread wires and measuring pins and all other related instruments
- Threaded & plain plug/ring gages
- Torque wrenches - dial, snap actions, screwdriver, torque multipliers, hydra and pneumatic torque (Capacity: 4 inch-lbs to 6500 foot-lbs, test equipment accuracy within 1% of indicated value)

Rotor Balancing & Diagnostics

- Balance pumps, motors, turbines & generators
- Detect/eliminate resonances
- Diagnostic measurements and analysis
- Multi-Plane balancing
- On-Site balancing

Radiac

- Alpha calibration
- Gamma and neutron calibrated ranges
- Licensed radioactive calibration sources

Various Testing, Cleaning & Other Facilities/Equipment

- Air flow to 10,000 FPM
- Capable of testing lube oil, JP5, or water pumps & components from 1 gpm to 8,000 gpm
- Chemical acid cleaning of sea water systems and components
- Clean room for submarine periscope repairs
- Dew point indicators
- Electric or steam driven components
- Gas monitors/explosimeters
- Hydro blasting
- Laboratory destructive and Non-Destructive Testing
- Liquid flow to 650 GPM
- Mechanical property testing
- Metals and fatigue test facility
- Nuclear type I and SPCC cleaning of components in clean areas
- Nucleonic lab
- O₂, N₂, and H₂ cleaning
- OSH/EPA lead room
- Portable load banks
- Pressure to 40,000 PSI
- Pressurized enclosed loop hot water testing
- Rubber, plastic, and paint testing
- Shop hydro and pneumatic testing facility
- Six test stands capable of 45,000 pph steam
- Tank and compartment testing
- Temperature/Humidity gages
- Vacuum ovens
- Vacuum to 32"HG
- VPI varnish systems

SERVICES

We offer a variety of industrial, manufacturing, and maintenance services for the Navy and other customers.

Non Destructive Testing (NDT)

- Alloy Identification (material identification)
- Eddy current inspection (weld, de-alloy, condenser tube)
- Liquid penetrant inspection (base materials - threaded fasteners, crane hooks, shackles, etc., pipe welds, structural welds)
- Magnetic particle inspection (base materials, pipe welds, structural welds)
- Radiographic inspection (pipe, structural, casting)
- Ultrasonic inspection (thickness, determination of liquid level, soundness, glass reinforced plastic dome, welds (butt and tee), lead soundness/bond, detection of intergranular stress corrosion cracking, crane rail inspection, babbitt bearing bond inspection)
- Visual/dimensional inspection (pipe welds, structural welds)

Materials, Chemical & Special Testing

- Analytical (optical emission, atomic absorption, x-ray fluorescence, ultraviolet-visible-NR spectroscopy, spectrochemical, optical emission spectroscopy, wet chemical, ICP)
- Chromatography (GC, GC/MS, IC)
- Environmental analyses accredited by A2LA for RCRA, CWA, TSCA and NPDES
- Infrared Spectroscopy (fourier transform, micro spectroscopy, transmission, ATR, DRIFT)
- Joint Oil Analysis Program (JOAP) laboratory for central pacific area. A combined effort of the Navy, Army, and Air Force
- Metallurgical (failure analysis, metallography, mechanical testing, tensile, compression, fatigue, hardness, fracture, toughness, flight load simulation, welds/braze joints, heat treating, shot peening)
- Microscopy (photomicrography/photomacrography)
- Optical (polarized light, image analysis, scanning electron, energy dispersive)
- Process engineering (plating, cleaning, Plastic Media Blasting (PMB), organic coatings, polymers, adhesives/sealants, thermoplastics, thermosets, mechanical testing, compositional analysis)
- Surveillance testing (breathing air (HP and LP), diver's air, gases, hydraulic fluid contamination (HCCP), fuels, dielectric coolants, plating solutions, lubricants and greases, preservatives))

Welding Services

Welding processes

- Manual and automatic gas-tungsten arc
- Gas metal arc
- Flux cored arc - gas shielded
- Shielded metal arc
- Submerged arc welding (Shafts)
- Orbital arc welding

Thermal Cutting Processes

- Air carbon arc
- Plasma arc
- Standard oxy-fuel
- High volume oxy-fuel
- Automated cutting tables

<ul style="list-style-type: none"> • Consumable insert /backing ring butt weld joints and socket weld joints • Thermal heating 	
<i>Metals & Materials</i>	<i>Fabrication</i>
Qualified procedures for following materials: <ul style="list-style-type: none"> • Aluminum alloys • Carbon and mild steel alloys • Copper alloys (such as copper nickel and nickel copper alloys) • Exotic alloys • High alloy steels • Nickel alloys (such as Inconel and others) • Quench and tempered steels (Armor Steels) • Stainless Steel Alloys • Titanium 	<ul style="list-style-type: none"> • Casting repairs • Machinery component rehabilitation • Piping systems • Pressure vessels • Storage tanks • Structural assemblies

<i>Painting & Coating Services</i>
<ul style="list-style-type: none"> • Application of fiberglass and resin coverings • Abrasive sandblasting (all types of grit) • Electrochemical brush plating • Electrostatic epoxy spray • High pressure hydro blasting • In shop teflon and powder coating • Specialty painting (special hull, camouflage, etc) • Surface preparation and painting (epoxy to high solids)

<i>Thermal Spray Technology & Application</i>		
<i>Processes and Materials</i>	<i>Corrosion Control</i>	<i>Rotating Machinery</i>
<ul style="list-style-type: none"> • All types of bronzes • Aluminum & monel • Ceramic • Plasma Y flame powder • Plasma, arc & flame wire • Stainless & carbon steel 	<ul style="list-style-type: none"> • All ferrous materials In corrosive environments • Dry dock hardware • Foundations & hangers • Foundations valves & piping Components • Industrial facility components • Shipboard components • Valves piping components 	<ul style="list-style-type: none"> • Blower fans & impellers • Main feed pump shafts • Pistons & cylinders • Pump & valve components • Turbine rotor shafts • Valve stems

<i>Structural Fabrication & Lay Out</i>		
<ul style="list-style-type: none"> • Digital theodolites to determine horizontal and vertical reference lines • Ferrous and non-ferrous metals including steels and their alloys, aluminum, brass, bronze, copper alloys, nickel alloys, and stainless steels • Mold loft – patterns, shape templates, molds, and CAD/CAM equipment or shop fabrication 		
<ul style="list-style-type: none"> • Photogrammetry services (+/- 0.004") • Portable Coordinate Measuring Machine (CMM), Romer, for highly accurate 3D measurements • Surface craft and submarine structures and components 		
<i>Metal Fabrication</i>	<i>Lofting Operations</i>	<i>Fabrication and Assembly</i>
<ul style="list-style-type: none"> • Alloy and Stainless Steel • Non-Ferrous - Aluminum, Brass, Bronzes, CuNi, Inconel, Lead, NiCu, and others • Carbon and Mild Steels • High Strength Steels (OSS, HSS, HY80, HY100, HY130) 	<ul style="list-style-type: none"> • Circularities on all types of vessels • Electronic hull mapping • Geometric modeling • NAVSEA CAD II compatible 	<ul style="list-style-type: none"> • R & D modules • Ship's structure • Submarine hull sections

<i>Sheet Metal & Label Plate Services</i>	
<ul style="list-style-type: none"> • Benches, bins, & storage boxes • Brackets • Counter tops & sinks • DOP filter testing • Drafting services • Fire and security doors • Laser cutting • Lockers and shelving • Machinery guards • Numerical controlled fabrication • Plasma cutting • Screens • Shelters and security enclosures • Stowage • Ventilation ducting components • Ventilation system balancing 	<ul style="list-style-type: none"> • Label plate manufacturing • Laser – engraving • Metal – engraving • Metal and vinyl labels • Photo etching and engraving • Photochemical milling and engraving in all metals • Photograph quality aluminum plates

<i>Manufacturing & Machining Services</i>
<ul style="list-style-type: none"> • In place repair/machining of propulsion plant, auxiliary machinery, valves, and pumps • Lathe, milling, planer, grinding, honing, balancing, straightening, and babbiting work • Mechanical components and parts • Tool sharpening and modifications

Component Refurbishment

- Boat davit, capstan, and windlass repairs
- Cold patch epoxy application
- Chemical clean seawater sides of heat exchangers/condensers
- Electroplating and electrochemical brush plating
- Gas turbine repair (including LM2500 and Allison engines)
- Manufacture special tools and cutting/grinding machines
- Marine main and auxiliary engine repair/refurbishment
- Mechanical parts and component repair/refurbishment
- Ordnance equipment repair
- Overhaul and test of turbines, pumps, valves, and associated
- Perform removal, repairs, fabrication, installation, and testing of high-pressure propulsion boilers
- Pumps and other component repair/refurbishment (steam, water, gas, oil, and air)
- Receive, disassemble, overhaul, reassemble, and inspect all types of pumps
- Refurbishment of parts and components for all industries
- Turbine generator repairs/refurbishment

Valves – In Shop Services

- Hydrostatic test and leak proof to 10 kpsi
- Repair of BRA-24 retrieval system
- Saltwater ball valve repair to include epoxy, cold patch and shim repairs
- Test, overhaul and repair of various steam, water, lube oil, fuel and gas system valves
- Types of valves serviced - gate valves, globe valves, ball valves, check valves, pressure regulating valves, relief valves, and safety valves
- Valve reseating from ¼” to 12” globe valves and 2-¼” to 14” gate valves

Shipboard Mechanical Component & Valve Repairs

- Alignment of main propulsion shafting
- In-place testing of mechanical remote operators
- Inspection and repair of main propulsion bearings, brake assemblies and stern tube seals
- Limited in-place machining, onboard controlled drills and taps, and broken stud/tap removal
- Main lube oil and seawater strainer repairs
- Removal, reinstall and alignment of main and auxiliary machinery, deck machinery, laundry, galley and scullery equipment
- Repair of all types of diving, snorkel induction, snorkel exhaust, main steam throttle and other in-place steam valves
- Repair of main and auxiliary machinery including: windlass, capstans, steam turbines, and stern tube seals.
- Repair of submarine and surface craft valves, components, and equipments
- Repair submarine hatches and operating systems
- RISIC repair and alignment

Governor & Injector Services

- Overhaul and test of governors and speed sensing devices
- Test, adjustment and overhaul of fuel pumps, nozzles and injectors
- Test compression of nozzle springs

Internal Combustion Engine Services

- Analyze diesel and gasoline engine performance
- Disassembly, overhaul, repair and test of main and auxiliary marine diesel engines (4 to 16 cylinder engines, blowers, injectors, lube oil flushing)
- Inspect, adjust and make minor repairs to small craft clutches, transmissions, drive shafts and drive trains
- Overhaul and repair of GM, Westerbeke, Waukesha, Fairbanks Morse and Detroit Diesel engines
- Overhaul and repair of P-250, P-100 pumps and outboard motors
- Overhaul diesel engine accessories, components and steering mechanisms for small boats, power take-off and transmissions
- Provide diesel engine lube oil flushing services for 688 class EDG's
- Re-face, reseal intake and exhaust valves
- Steam clean engine blocks, parts and accessories

Hydraulics Services

- Bench testing of all system relief valves
- Hydraulic equipment and component repairs/refurbishment
- In-place repair and overhaul of major hydraulic components
- In-shop overhauls, cleaning, repairs, and tests of hydraulic and pneumatic control valves
- Repair, overhaul, and bench test hydraulic and pneumatic components including actuators, in-line piston hydraulic pumps, and steering and diving system components
- Repair, overhaul, and bench test pneumatic regulating and reducing valves and components
- Ultrasonic cleaning of parts and components for all hydraulic systems

Piping Systems Services

- Chemical acid cleaning of sea water systems and components
- Cleaning and flushing to steam plant and Mil-Std-767 criteria
- Ferrous and non-ferrous piping systems modification and fabrication
- Flex hose repair and fabrication
- Fuel, steam, water, grease, lube and hydraulic fluids, oxygen, high and low pressure air
- Hydro blast drains, plumbing piping
- Hydro blast seawater piping
- Hydro testing
- Liquid freeze seal (Vortex and CO₂)
- Silver brazing
- Targeting, templating and fabricating pipes and tubing.

Heat Exchangers & Cooler Services

- Hydro blast seawater side of heat exchangers/condensers
- Hydrostatic testing of heat exchangers/condensers
- Repairs, refurbishments and cleaning of sea and fresh water system components
- Troubleshooting and hydro testing

Air Conditioning & Refrigeration Services

- Inspection, test, evaluation, adjustment and balancing of air conditioning systems
- Leak testing and brazing services on all systems
- Recovery of all refrigerants
- Troubleshoot, overhaul and repair of LPAC's, HPAC's, LPAD's and HPAD's
- Overhaul, repair, assist in operational flush and test refrigeration systems
- Cryogenic services (liquid nitrogen and inert gas services)

Insulation Services

- Anti-sweat for cold systems
- Asbestos removal, sampling, testing, abatement, disposal, manufacture and installation
- Block and molded thermal insulation
- Bulkhead/Overhead lagging
- EPA certified supervisors, workers, inspectors
- Fiberglass blankets
- Flame shield and flange shield manufacture
- Foam rubber
- Heat deterrence pad manufacture
- Odd shapes (valves, turbines, etc)
- Paraffin impregnation
- Pipe Lagging
- Polyamine
- Removable pads

Fabric & Containment Services

Fabric Work

- Customer fabrication
- Custom material – kevlar, netting, light and heavy mil-poly, linen, canvas, cloth, leather goods
- Environment containments
- Environment garments
- Herculite bags, clothing and containments
- Industrial clothing, hoods, coveralls, etc
- Industrial drapes, curtains, and shrouds
- Radiological containment items and spill kits
- Temporary weather shelters
- Upholstery work, habitability, furniture, mattress covers, etc
- Welding containment blankets

Containments

- Fabricated for negative ventilation
- Fabricated to customer's specifications and dimensions
- Hermetically sealed
- Pass-through wall sleeves
- Tinted see-through poly windows
- Walk-in vestibules

Shipwright & Wood Working Services

- 52" board saw capable of sizing 42' long timbers
- Construct templates for piping layouts
- Construct wooden mockups and formers for fiberglass lay-up and rubber molding
- Cradles for dry docking
- Erect and certify staging, stair decks, landings, shoring, cradles and pipe shelters, boat chocks, shape blocks and lat out lines and offsets.
- Fabricate wooden articles and equipment from samples, blueprints of working sketches
- Install and replace approved formica coverings
- Install, repair, and replace approved deck coverings (i.e. deck tile, lonseal matting, terrazzo reseals)
- Layout and install ship's reference lines. List and trim readings
- Manufacture and repair wood deck grating, platforms, and gangways including handrails, treads and stringers
- Manufacture, install and repair wooden structural parts which include stems, sterns, transoms, frames, stakes, decking, beading and capping for small boats
- Repair/build floats and camels
- Shape, mold, and mill large timbers
- Shipping skids for machinery and large components

Rubber & Plastics Manufacturing Services

- Application of fiberglass and resin coverings
- Autoclave curing
- Buna, neoprene, natural and raw rubber, high temperature silicon, polyurethane
- Compression molding
- Fiberglass coverings
- Injection molding - polyesters, nylon & PVC, varying types of rubber, multi-cavity capability, temperatures 40-600 degrees
- Over 120 formulas
- Rubber products – compression molding, autoclave curing and vulcanizing.
- Natural and raw rubber, high temperature silicon, buna and neoprene, polyurethane, and over 120 different formulas to produce specific grades of rubber
- Rubber to metal bonding & plastics to metal bonding

Temporary Services

- Liquid and solid waste disposal/treatment
- Manufacture ASW hoses, two-ply metal reinforced, sizes 1”–2.5” hydro test, install, maintain and remove
- Manufacture shore power cables, THOF 500. Install/maintain/remove
- Provide exhaust ventilation for dust, fumes, heat removal or exchange of air or negative pressure
- Provide filter/unfiltered ventilation for reactor compartment work
- Provide fire fighting hoses to ships systems or stand-alone
- Provide fire/alarm/cascon (1mc/2mc) systems for ships under availability
- Provide flooding kits for ships under overhaul, or de-watering pumps for production use
- Provide fresh water for ships testing or production use
- Provide lighting, with fluorescent, stringer incandescent, low voltage LED, spot, flood, underwater and explosion proof
- Provide low-pressure air hoses for ships systems/production use, and assemble hoses/fittings to suit
- Provide portable electrical power for ships systems and production shops industrial use from 24vac single to 460vac three phase
- Provide potable water for ships systems or stand alone water coolers
- Provide spot cooling with ten-ton A/C units
- Provide spot heating for drying out spaces or special paints
- Provide temporary chill water units up to 200 tons
- Pure water/controlled pure water, manufacture/delivery
- Radioactive material escort and accountability for RAM

Electrical & Electronic Services

- Alarm/Warning systems
- Circuit breaker and magnetic controllers (repair, reconditioning & test, commercial & military, molded base breakers , voltages to 4160v, alternating and direct current, controllers to size 6)
- Shipboard cable/wire way construction, inspections and certifications
- Electrical control systems
- Electrical switchgear
- Elevator controllers
- Indicators and controls (wind speed & direction, tank level indication, temperature indication, salinity cells & systems, visual & audible Alarms)
- Multi pin, coaxial, and fiber optic connectors
- Repair shipboard cable installations
- 688 class battery change outs (Tiger team/distant support)
- Clean and test battery flash arrestors
- Prepare/provide battery electrolyte solution and coordinate the analysis of electrolyte solution with the chemistry lab
- Fabrication of fiber optic connectors
- Repair and test AEGIS and ARLEIGH BURKE class Interior Voice Communications Systems
- Test, align and repair mini combined units and combined instrument panels
- Test, inspect and repair electrical/electronic gyrocompasses and associated equipment

<ul style="list-style-type: none"> • Troubleshoot, repair and test alarm panels and associated circuits including Central Atmosphere Monitoring Systems, unauthorized entry (if not performed by weapons personnel), salinity, flooding and HALON • Troubleshoot, repair and test machinery control and indicating systems including remote shaft direction and speed indicator and alarms, mast position indicators, depth and liquid level indicator and alarms, temperature alarms, remote valve position indicators, snorkel safety and head valve control systems, steering and diving control systems, depth detector systems and fin stabilizer systems • Troubleshoot, repair and test ship's general announcing and alarm systems • Troubleshoot, repair and test ship's navigation and control systems including dead reckoning equipment, plotters, underwater and dummy logs, wind direction and velocity indicators, shaft revolution counters, RPM indicators, Global Positioning Systems (GPS) and submarine hovering system
<ul style="list-style-type: none"> • Balance pumps, motors, turbines & generators • Disassemble, strip, rewind, varnish, dip, bake, reassemble and test electrical rotating machines up to 150 HP including generators, motors, and motor- generators sets • Inspect, test, overhaul, repair, and accomplish approved alterations to shipboard electrical equipment including motors, generators, motor-generators, regulators, magnetic clutches, electrical cables, control panels, motor starters, switches, resistor banks, power distribution and lighting systems • Multi-plane balancing • On-site balancing • Replace damaged or misaligned sound mounts and install axial staving • Replace motor/generator bearings • Test, inspect and repair shipboard winches • Test, repair shipboard motor operated valves • Undercut, bevel, and stone commutators • Wind replacement coils (except square wire) for armatures, field magnets, rotors, stators and controllers
<ul style="list-style-type: none"> • Detect/Eliminate Resonances • Diagnostic measurements and analysis • On-site sound and vibration measurement/recording/testing for misalignment, faulty bearings, warped mounts, and noise levels of installed and operating machinery • Perform shop and on-site sound and vibration measurements and analysis
<ul style="list-style-type: none"> • Provide module screening, testing, and repair of electrical and electronic circuit card assemblies and electronic modules • Provide 2M micro/miniature high reliable solder repairs • Provide Module Testing and Repair (MTR) using gold disk, along with gold disk development
<ul style="list-style-type: none"> • Assist with the alignment of fairing bearing frames on 688 class submarines. • Clean, repair, test and adjust radar pedestal mechanisms • Inspect, test, repair and install SHIPALTS on surface radar, surface navigation, IFF, surface and submarine communications systems • Install & remove mast mounted Dynamic Collimator, used systems, and photo certification. • Maintain custody of mast and antenna alignment gear and conduct optical alignment of masts • Bearing adjustments for periscope optical alignments

<ul style="list-style-type: none"> • Hydrostatic test of submarine antennas, remove and replace deteriorated or damaged composition and shielding gaskets • Mast and antenna material condition inspections • Mast bearing adjustments • Remove, install and repack periscope barrels • Remove, test, repair, clean and install radar antennas including surface search and navigational radars • Repack snorkel and ESM masts • Repair and adjust RDF mast closure door systems • Repair, test, alignment and calibration of electronic navigation systems and equipment (navigational radar sets, radar repeaters, IFF equipment, radio transmitting, transceiving and receiving equipment) • Test and replace radar waveguide sections • Test standing wave ratios, radiation loss, and impedance loss of waveguides and transmission lines • Test, repair and alignment of ESM equipment • Test, repair and perform RF sweeps of periscope electronic components • Test, repair, clean and install electronic scanning arrays, ECM/ESM, IFF/UHF, communication, and navigation equipment antennas, including hydraulic hoists • Troubleshoot, repair & test type 2D & 2F, 8B Mod 3, 18B & 18D periscope systems. • Troubleshoot, repair and test navigational equipment, including alidades, sextants, stadimeters, compasses, parallel motion protractors, ship's binoculars and hand held binoculars. • Troubleshoot, repair, electronically and optically adjust, and test type 18B and 18D periscope eyepiece boxes.
<ul style="list-style-type: none"> • Install and remove Noise Augmentation Units (NAU) on 688 class submarines • Install equipment upgrades to sonar systems and ancillary equipment • Install equipment upgrades to fire control systems • Remove, repair, and replace External Hull Fittings (EHF) for all associated sonar systems • Remove, test, repair and install VLS external cables and Electrical Hull Penetrations (EHP) • Repair RF and data cables for the AN/SLQ-32(V) • Sweep cables and waveguides to determine VSWR and insertion loss for AN/SLQ-32 (V) • Test AN/SLQ-32 (V) digital circuit cards with the AN/ULM-465 digital card test set • Technical assistance to Ship's Force on AN/SLQ-32(V) maintenance related problems • Technical assistance, troubleshooting, and testing of subsurface CCS Mk1 and MkII fire control systems • Test, remove, and install hydrophones and transducers • Test, repair, align, calibrate and perform physical and operational inspections of the AN/SLQ-32(V)
<ul style="list-style-type: none"> • Test, inspect and repair shipboard helicopter power starting systems

<i>Ordnance Equipment Test & Repair Services</i>
<ul style="list-style-type: none"> • Boring bars to 36' long x 20' diameter • Close-in Weapons System (CIWS) • Large caliber gun mounts

- Missile tubes and launchers
- Radar cooling systems
- Torpedo tubes
- Vertical launch system
- Weapon handling

Crane, Rigging, Transportation, Maintenance, Testing & Certification

- Developing customer courses and administering training in the operation and maintenance of weight handling equipment. Support is provided for local activities as well as WESTPAC activities.
- Dock/undock ships, submarines and other vessels
- Load/unload ships, submarines, transport vessels
- Magnetic plate handling equipment and multiple hydraulic jack assemblies
- Manufacture and perform weight tests on lifelines (CRES and Kevlar), wire hoisting slings and pendants, end fittings, flight deck nets (CRES and nylon), boat gripes, and lifeboat release cables
- Manufacture and test handling gear - hydraulic load testing, splintered socket attachments, wire rope products, rope work, hand splicing
- Manufacture, install, and test running rigging
- Portal, truck and floating crane services
- Preparing custom crane maintenance programs including standard and specialized maintenance procedures, test procedures, crane operator instructions, and weight handling guidelines.
- Providing analytical services for lifting equipment
- Repairing, testing and certifying lifting equipment - chain falls, cranes (portable and building)
- Rigging services supporting ships and facilities
- Swage press machine, wire cutting machine and a zinc pot for pouring of molten zinc
- Weight test - A-frames, chain hoist, beam clamps, nylon slings, J-bars, Stream trolleys, fork lifts, lashing straps, safety tracks, hatch davits, spreader bars, fueling stations, capstans, dumb waiters, accommodation ladders, ammo skip boxes, ammo cargo elevators, boat booms and davits, and vertical launch handling equipment
- Auditing various government programs to ensure compliance

Consolidated Diving Services

- Inspections - flooded compartments, highway and bridges, marine watercraft, underwater photography and video recording
- Salvage Operations - hazardous materials retrieval, reflect submerged vessels, underwater environmental cleanup, underwater obstruction removal
- Underwater Construction - cofferdam installation, concrete repair, welding, burning, drilling, pier repairs, piling repair/removal, pipe line installation, rigging operations
- Underwater Repair - ballast tank interiors, bearing and seal repairs, electrical/electronic repairs, propeller removal & installation, propulsion shafting repair, sonar/communication domes, underwater painting

Occupational Safety, Health & Environmental Services

- Occupational Safety & Health
 - Safety and Occupational Health inspections and surveillances
 - Mishap Investigation and Reporting, including serious personal injury/fatality and/or material property damage mishaps
 - Safety and Occupational Health Training
 - Job Hazard Analysis
 - Voluntary Protection Program Mentoring and Assistance
 - Contractor Safety and Occupational Health Oversight
 - Gas Free Engineering and Confined Space Testing and Evaluation
 - Workplace Personal and Environmental Monitoring
 - Evaluation of Heat Stress Working Conditions
 - Industrial Hygiene Surveys and Health Hazard Evaluations
 - Technical Assistance and program guidance to meet Federal and Naval regulations
 - Management of Occupational Safety and Health Programs
 - Assessment of Occupational Safety and Health Program effectiveness
 - Asbestos Bulk Sampling Analysis
 - Medical Surveillance Program, employee examination and enrollment
- Environmental
 - Solid and Hazardous Waste Disposal
 - Hazardous Material Management
 - Technical Assistance and program guidance to meet Federal, State, Navy and local regulations
 - Management of environmental programs
 - Development of plans and permits
 - Development and Implementation of Environmental Management System (EMS)
 - Provide technical /specialize environmental guidance or assistance
 - NEPA Documentation
 - Environmental Training
 - Assist visits and Environmental Compliance Evaluations/Assessments
 - Contractor Oversight
 - Spill Cleanup and Evaluation
 - Environmental Sampling
- Building inspection for closure, PCB assessment, asbestos removal, lead removal
- On-Site and Off-site Compliance Inspections - performed in accordance with all federal, state and local regulations, provides for discrepancy tracking, deficiency abatement evaluations

Other Services

- Business and Strategic Planning
- Calibration services – Fleet Calibration Center
- Contracting services
- Engineering services (combat systems, crane/rigging, industrial, marine, nuclear, radiological control, facilities, and all other engineering disciplines)
- Fly Away and Tiger Teams
- Industrial Engineering
 - Process Improvement Studies

- o Engineered Labor Standards
- o Ergonomic Studies
- o Production Shop Layout & Design
- o Process Measurement
- o Capital Equipment Forecasts
- o Work Flow Studies
- o Material Handling & Storage
- Information Resource Management – implement new technologies to meet the requirements of our customers (Surface Warfare Enterprise (SWE), Undersea Enterprise (USE), Naval Air Enterprise (NAE)) and other stakeholders.
- NAVSEA’s fleet/ distance support technical services
- Oil analysis – Joint Oil Analysis Program (JOAP)
- Nucleonic lab services – isotopic analysis, dosimetry processing
- Port engineer services
- Security Services (restricted areas, access control, force protection, asset protection, and specialized security services)
- Special Tooling & Engineering
 - o Tool & Fixture Design
 - o Special Tool Procurement
 - o Tooling Evaluation
 - o Tool Safety Engineering